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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,031	03/31/2004	Louis A. Lippincott	ITL.1713US (P18841)	9305

21906 7590 08/03/2010

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EXAMINER	
MARANDI, JAMES R	
ART UNIT	**PAPER NUMBER**
2421	

MAIL DATE	DELIVERY MODE
08/03/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/816,031	LIPPINCOTT, LOUIS A.	
	Examiner	Art Unit	
	JAMES R. MARANDI	2421	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 May 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7,8 and 24-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7,8,and 24-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This action is in response to applicant's amendment filed on 5/12/2010. Claims 1-5, 7, 8, and 24- 27 are presently pending. Claims 6, and 9- 23 have been cancelled.

Response to Arguments

2. Applicant's arguments filed on 5/12/2010 have been fully considered but they are not persuasive.

With respect to claim 1, applicant argues that "***No reference, including Youn, has anything to do with digital-to-analog or analog-to-digital conversion. There is no mention or reference of any type in Youn of digital-to-analog or analog-to-digital conversion.***" Page 4, Remarks, lines 3-6

Examiner disagrees. As detailed in the analysis of claim 1 (Office Action dated 2/18/2010, Fedele discloses transcoder 100 where:

a digital to analog converter to convert said intermediate format to analog data (Fig. 1, the digital data form 110 is converted by 120 to analog YIQ; Col. 3, lines 10- 15)**;** and

an analog to digital converter (150) **to convert said analog data to digital data** (Digital NTSC Interface, Col.3, lines 15- 23)**;**

Furthermore, Youn discloses transcoding by the cascade of a decoder and an encoder, as shown in Fig. 1, which is further detailed in Fig. 3, where pixel P_f^c (analog) enters the front encoder and goes through a DCT with Quantization Q1 (digitized, and thereby A/D conversion), and subsequently enters a decoder where it goes through the reverse operation (D/A). See Page 31, Section II.

Applicant further argues that "***Moreover, there is no discussion of errors produced by these*** [A/D, D/A conversion] ***and no suggestion whatsoever that a localized motion search could be used to correct such errors.*** Page 4, Remarks, lines 6-7

Examiner disagrees. Youn has disclosed that the use of incoming motion vectors are non-optimal due to the reconstruction errors (see Abstract). Furthermore, on Page 30, (2nd Col. next to last paragraph), Youn further states that "[when motion vectors extracted from the incoming bit stream are reused] this simple motion-vector reuse scheme may introduce considerable quality degradation. Although an optimized motion vector can be obtained by a full-scale motion estimation, this is not desirable because of

its high computational complexity." To optimize the motion-vector estimation, instead of a full-scale motion estimation, Youn searches a best matching macro block within a predefined search window S (**localized search**). As Detailed in Section II, and further refined in Section III.

Applicant asserts that "***To the contrary, the sole reason why Youn says he can use the same motion vectors is when the effect of the term "Δ^c_f (i, j) - Δ^P_s (i+m, j+n) in equation 5 is negligible then "performing a new motion estimation would give the same motion vector as the incoming motion vector." See Youn at page 32, left column, first full paragraph.***" Page 4, Remarks, lines 8-11

Examiner respectfully points out that the above statement is taken out of context, as Youn is arguing against such as case. The above referenced passage is followed by Youn reiterating that "Since in general there is no guarantee that the effect is negligible all the time, there are nonzero probabilities that the quantization error may cause the incoming motion vector to be non-optimal [i.e., we can find a better motion vector which minimizes (4)" Page 32, 1st Col., 2nd paragraph, last four lines

Applicant concludes that "***None of these two terms have any applicability in the case of analog-to-digital or digital- to-analog conversion. The text makes it clear that these two terms are related to the quantization step size Q2 in the transcoder shown in Figure 1 and the quantization step size Q1 in the front encoder shown in***

Figure 1. Thus, they have no applicability to analog-to-digital or digital-to- analog conversion and there is no basis, from equation 5, to conclude that the result applicable there would apply in the case not involving quantization step size differences, but resulting from analog-to-digital and digital-to-analog conversion in series." Page 4, Remarks, lines 12-18

Examiner disagrees. As shown above, Youn discloses estimating motion vectors, using a localized search (within window S) to avoid degradation due to quantization errors, as the signal moves through the transcoder and gets processed (A/D, D/A).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-5, 7, 8, and 24- 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paul Moroney, USPN 6,532,593 (herein after "Moroney") in view of Nicola John Fedele, USPN 5,920,354 (hereinafter "Fedele"), further in view of J. Youn et al.,"Motion Vector Refinement for High-Performance Transcoding", IEEE Transactions on Multimedia, Vol. 1, No. 1, March 1999, (hereinafter "Youn").

5. Regarding claim 1, Moroney discloses **a system, comprising:**

a decoder to decode encoded video information having a first format (Fig. 2, 210) **into intermediate video information and to extract motion vectors from the encoded video information** (Motion Vectors-MV- are extracted at 115 and sent to 135 and 194), see background information in Col. 4 line 6- Col. 5, line 9, and further detail of Fig. 2 operation in Col. 5, line 10 through Col. 6, line 26.**;**

a compression block (250) **to encode the digital data into output video information having a second format using the motion vectors extracted from the encoded video information** (Motion Vectors –MV- are supplied and used in 194 of compression block 250)**; and**

a device to store the output video information from the compression block (Fig. 4, 470; Col. 6, line 50 through Col. 7, line 33).

Moroney does not disclose

a digital to analog converter to convert said intermediate format to analog data; and

an analog to digital converter to convert said analog data to digital data;

However, Fedele discloses:

a digital to analog converter to convert said intermediate format to analog data (Fig. 1, the digital data form 110 is converted by 120 to analog YIQ; Col. 3, lines 10- 15)**;** and

an analog to digital converter (150) **to convert said analog data to digital data** (Digital NTSC Interface, Col.3, lines 15- 23)**;**

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of invention, to modify the system of Moroney with Fedele's invention in order to have an analog intermediary signal to be supplied to analog receivers and offer transcoding possibilities for a variety of video formats.

Moroney discloses reuse of the motion vectors in order to reduce the complexity of full motion estimation and thereby reduce the cost of the cascaded transcoders (decoder/encoder), as in Col. 4, lines 60 through Col. 5, line 9.

The system of Moroney and Fedele is silent on said compression block to **compensate for errors**, **introduced by the digital-to-analog** (D/A) **and analog-to digital** (A/D) **converters, by performing a localized motion search.**

However, Youn discloses that incoming motion vectors may become non-optimal due to reconstruction errors (**D/A and A/D conversion**). See Page 30, Abstract. Youn further discloses that by reusing the motion vectors the complexity of the transcoders is reduced (Page 30, 2nd column, next to last paragraph). Youn further discloses the possibility of quality degradation due to reuse of motion vectors, and therefore proposes a fast search adaptive motion vector refinement (Page 31, 1st column, 1st paragraph). Such search is based on a predefined (**localized**) **motion search** window S (Page 31. Section II, where as shown in equations 1 and 2, the search is limited to current and previous frames).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of invention, to modify the system of Moroney and Fedele with Youn's teaching in order to improve the quality of transcoding while maintaining low cost of the transcoders.

5.1. Regarding claim 2, **wherein the first format and the second format have a common format**, see Moroney Col 5, lines 13- 24.

5.2. Regarding claim 3, **wherein the common format includes MPEG-1, MPEG-2, MPEG-4, H.264, Windows Media Video version 9 (WMV9) or Advanced Video System (AVS)**; Moroney discloses transcoding from one format to

another and provides examples such as HD TV to SD TV, or MPEG-1 to MPEG-2 (Col. 3, lines 26-35). Fedele's disclosure further offers examples such as HDTV to HDTV (Table 1), HDTV to NTSC, PAL etc. Inclusion of other formats were notoriously well known to those of ordinary skill in the art, as further demonstrated by A.C.W. Lai et al., USPGPUB 2002/0190876, ¶¶ [8] and [63], and tables 2-5.

5.3. Claim 4 is rejected by the same analysis as claim 3.

5.4. Regarding claim 5, **wherein the decoder is arranged to extract quantization data, picture data, or error data from the encoded video information,** see Col. 3, lines 58-62, Fig. 2, Col. 5, lines 13- 18) .

5.5. Regarding claim 7, **wherein the intermediate video information includes digital pixel information**, Moroney discloses in Fig. 2 that the digital pixel information is provided to adder 130 and upon further processing output to 160 (Col. 4, lines 15- 44).

5.6. Regarding claim 8, Moroney does not explicitly dislcose **including: an output port to output the intermediate video information**. However, Fedele discloses the intermediate analog signal (between 120 and 150 in Fig. 1) to be of YIQ format.

Therefore, it would have been obvious to one of ordinary skill in the art to modify the system of Moroney with Fedele's invention in order to provide an intermediate display for monitoring of intermediate signal information.

6. Regarding claim 24, Moroney discloses **a method, comprising**:

obtaining at least motion vectors from an encoded video stream (Fig. 2, decoder section 210, MVs are extracted at 115)**;** and

decoding the encoded video stream to generate a decoded digital video intermediate video stream (the stream moving between decoder 110, element 130, and encoder 150, element 160)

encoding the second digital video stream to generate an output video stream using the motion vectors obtained from the encoded video stream (Motion Vectors –MV- are supplied and used in 194 of compression block 250)**;**

Moroney does not disclose

converting the decoded digital video stream to an analog video stream;

and

converting the analog video stream to a second digital video stream;

However, Fedele discloses:

converting the decoded digital video stream to an analog video stream;

(Fig. 1, the digital data form 110 is converted by 120 to analog YIQ; Col. 3, lines 10-15)**;** and

converting the analog video stream to a second digital video stream

(Digital NTSC Interface, Col.3, lines 15- 23)**;**

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of invention, to modify the system of Moroney with Fedele's invention in order to have an analog intermediary signal to be supplied to analog receivers and offer transcoding possibilities for a variety of video formats.

Moroney discloses reuse of the motion vectors in order to reduce the complexity of full motion estimation and thereby reduce the cost of the cascaded transcoders (decoder/encoder), as in Col. 4, lines 60 through Col. 5, line 9.

The system of Moroney and Fedele is silent on said compression block **compensating for errors introduced by the digital-to-analog** (D/A) **and analog-**

to digital (A/D) **conversion by performing a localized motion search of the second digital video stream.**

However, Youn discloses that incoming motion vectors may become non-optimal due to reconstruction errors (**D/A and A/D conversion**). See Page 30, Abstract. Youn further discloses that by reusing the motion vectors the complexity of the transcoders is reduced (Page 30, 2nd column, next to last paragraph). Youn further discloses the possibility of quality degradation due to reuse of motion vectors, and therefore proposes a fast search adaptive motion vector refinement (Page 31, 1st column, 1st paragraph)to **compensate for errors introduced** during reconstruction process (**D/A and A/D conversion**) . Such search is based on a predefined (**localized**) **motion search** window S (Page 31. Section II, where as shown in equations 1 and 2, the search is limited to current and previous frames).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of invention, to modify the system of Moroney and Fedele with Youn's teaching in order to improve the quality of transcoding while maintaining low cost of the transcoders.

6.1. Regarding claim 25, **wherein the obtaining further includes obtaining quantization data and picture data from the encoded video stream**, Moroney discloses that picture data, including quantization, is obtained at 115 (Fig. 2); also see Col. 4 line 6- Col. 5, line 23 .

6.2. Regarding claim 26, **controlling a rate of the encoding using the quantization data and the picture data**, picture information from 115 is supplied to encoder/compressor section 250 at 194 via link 220. Also see Col. 4 line 6- Col. 5, line 23.

6.3. Regarding claim 27, **storing the output video stream**, Fig. 4 ,the output of transcoder 427 is stored at 470; Col. 7, lines 3- 33.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contacts

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES R. MARANDI whose telephone number is (571)270-1843. The examiner can normally be reached on 8:00 AM- 5:00 PM M-F, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John W. Miller can be reached on (571) 272-7353. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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